

IN THE CLAIMS:

1. (Currently Amended) A composition comprising an adhesive agent and ~~dispersed therein~~ heat triggered thermoexpandable microcapsules, wherein said heat triggered thermoexpandable microcapsules are present in the composition in a range of 1 to 30% by volume, and wherein the heat triggered thermoexpandable microcapsules each comprise a shell ~~that encapsulates~~ encapsulating at least one expandable gas or volatile expandable agent or an explosive material so that when heat is applied to the composition, the heat triggered thermoexpandable microcapsules expand and/or release only part of their contents so as to reduce adhesive properties of the composition at an interface where the composition is applied.

2. (Cancelled).

3. (Previously Presented) A composition according to Claim 1, wherein the shell is composed of a polymer.

4. (Previously Presented) A composition according to Claim 1, wherein the adhesive agent is selected from the group consisting of urethane, polyurethane, polyvinylchloride and an MS polymer.

5. (Currently Amended) A composition according to Claim 1, wherein the heat triggered thermoexpandable capsules are microspheres or hollow fibres in the form of a powder.

6. (Original) A composition according to Claim 5 wherein the powder is provided with the adhesive agent in a pre-mixed form in a container.

7. (Previously Presented) A composition according to Claim 1, wherein the composition is formed at the time of, or shortly before, its use.

8. (Original) A composition according to Claim 7 wherein formation of the composition occurs within a dispensing device or at a point of exit therefrom.

9. (Previously Presented) A composition according to Claim 1, which further includes a fast cure agent or catalyst, whereby the composition is rapidly cured or set.

10. (Previously Presented) A composition according to Claim 1, which further includes a coloring agent so that the cured composition is black.

11. (Previously Presented) A composition according to Claim 1, wherein the microcapsules encapsulate more than one material.

12. (Original) A composition according to Claim 11 wherein the additional material is selected from one or more of the group consisting of an expanding agent, an agent capable of sublimation, water, an explosive material or an activator agent.

13. (Previously Presented) A composition according to Claim 11 wherein the microcapsules encapsulate different agents, either separately or in combination.

14. (Previously Presented) A composition according to Claim 11, further comprising intact expanded microspheres and/or microcapsules which have released their contents into the composition.

15. (Previously Presented) A composition according to Claim 2, wherein the microcapsule shell diameter is in the range 10 to 120 m.

16. (Previously Presented) A composition according to Claim 2, wherein the microcapsule shell thickness is in the range 3 to 7 m.

17. (Canceled).

18. (Original) A composition according to Claim 17 wherein the microcapsules are present in the range of 2-10% volume.

19 (Previously Presented) A composition according to Claim 1 wherein the composition is activated by heat in a heat activation range of 80-170° C.

20. (Original) A composition according to Claim 19 wherein the composition is activated by heat in a heat activation range of 120-150°C.

21. (Previously Presented) A composition according to Claim 2, further comprising a mixture of microcapsules of different diameter or shell thickness or of differing heat activation temperatures or different expanding coefficients.

22. (Currently Amended) A method of preparing a composition comprising:
providing an adhesive agent; and
dispersing heat triggered thermoexpandable microcapsules therein for fixing glazing.

23. (Previously Presented) The method according to Claim 22 wherein the composition further comprises a shell that encapsulates at least one expandable gas or volatile expandable agent or an explosive material.

24. (Currently Amended) A composition comprising a primer and ~~dispersed therein~~ heat triggered thermoexpandable microcapsules, wherein said heat triggered thermoexpandable microcapsules are present in the composition in a range of 1 to 30% by volume, and wherein said heat triggered thermoexpandable microcapsules each comprise a shell encapsulating at least one expandable gas or volatile expandable agent or an explosive material.

25-32. (Canceled).

33. (New) The composition of Claim 24, wherein the thermoexpandable microcapsules may be used in a heat-triggered bonding reduction of the composition.

34. (New) The composition of Claim 33, wherein the adhesive composition comprises a mixture of microcapsules of different diameter or shell thickness or of differing heat activation temperatures or different expanding coefficients.

35. (New) The composition of Claim 33, wherein the thermoexpandable capsules are microspheres which do not fracture their shells during expansion.

36. (New) A polyurethane or thermosetting adhesive composition comprising 3-5% by weight of microspheres in a cleaner and 5-10% by weight in a primer at an adhesive interface.

37. (New) A composition comprising a layer of adhesive and thermoexpandable microspheres wherein said thermoexpandable microspheres are present in the composition at 5-10 % by weight and said adhesive is of approximately the same diameter as the thermoexpandable microspheres.

I. Claim Amendments

Claims 1-32 are currently pending in the present application. Applicants have cancelled claims 2 and 17 without prejudice or disclaimer. The recitations of these claims may now be found in claim 1. Additionally, Applicants have added the term "heat triggered" to claims 1, 5 and 24. Support for this language may be found throughout the application, particularly on page 5, lines 5-10. Applicants have also cancelled claim 25 without prejudice or disclaimer to include its recitations into claim 24. Applicants also cancelled claims 26-32 without prejudice or disclaimer in view of the restriction requirement. Applicants have also amended claim 1 to correct for grammatical inconsistencies. Finally, Applicants have added claims 33-37. Support for these claims can be found throughout the specification of the present application.

II. Previous CD-ROM submission

Applicants respectfully request reconsideration of the Examiner's refusal to consider the CD-Rom that was submitted with Applicants 132 declaration. Applicants note that the CD-ROM is supported by the declaration and illustrates the differences between the present composition and those found in the cited references. Applicants submit that the CD-ROM is not part of the application, but is part of the 132 declaration and therefore should be considered. Again, Applicants note the CD-ROM is a ten minute movie illustrating the comparison between the present application and the cited references. Accordingly, Applicants respectfully request reconsideration of the submitted CD-ROM in addition to the present amendments and remarks.

III. Rejections under 35 U.S.C. § 103(a)

Claims 1-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hartman et al., Everaerts et al., Makhlouf et al., Gehlsen or EP 0717091. Applicants respectfully traverse this rejection for at least the reasons set forth below.

To establish a prima facie case of obviousness, the prior art reference or references when combined must teach or suggest *all* the recitations of the claim, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. § 2143. The mere fact that references can be combined or modified does

not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). To support combining references, evidence of a suggestion, teaching, or motivation to combine must be clear and particular, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). The Court of Appeals for the Federal Circuit has also stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000). Furthermore, as recently affirmed by the Court of Appeals for the Federal Circuit in *In re Sang-su Lee*, a factual question of motivation is material to patentability, and cannot be resolved on subjective belief and unknown authority. See *In re Sang-su Lee*, 277 F.3d 1338 (Fed. Cir. 2002). Respectfully, as will be discussed below, the Official Action fails to meet the requirements for a prima facie showing of obviousness under § 103.

Applicants submit that Hartman et al. either alone or in combination with the other references does not teach or suggest the present invention. Hartman et al. discloses a double-sided multi-layered tape, containing a substantially uniform distribution of pre-formed voids (See, Fig. 1). The voids of Harman et al., **which are at least an order of magnitude greater than those of the claimed thermoexpandable microspheres**, are generated by a blowing agent and not by thermally expandable microspheres. The voids give the core layer compressibility. Thus, the voids are not formed as a result of thermoexpandable microspheres. Moreover, the voids do not deactivate the adhesive properties of the composition at an interface where it is applied/attached. In other words, Hartman et al.'s microspheres are expanded not to deactivate chemical bonding and reduce adhesive properties as recited in claim 1 of the present application, but rather to generate large preformed voids to give core layer compressibility. Therefore, not only does Hartman et al. not teach the present invention, but it teaches away from the present invention as it discloses the formation of voids rather than the partial release of a composition to reduce adhesive properties of the composition at an interface where the composition is applied as recited in claim 1 of the present application.

Furthermore, Hartman et al. states at column 12, lines 33 to 37, that its tape comprises "a hot formed multilayer carrier including a core layer formed of a thermoplastic elastomer matrix containing a substantially uniform distribution of voids generated by a blowing agent comprising thermally expandable microspheres and at least one skin layer formed of a film-forming thermoplastic polymer, said core layer having a void volume determined by the proportion of blowing agent in the core layer and by the degree of expansion thereof. . . ." This differs from the present invention where, as recited in claim 1, the microspheres each comprise a shell that encapsulates at least one expandable gas which evaporates without creating voids in the matrix, as the microspheres remain integral with their expanded skin. Thus, in the expanded matrix of the present invention, there are no voids, but instead, expanded microspheres having their expanding liquid vaporized through their shells without creating any voids in the matrix. As a consequence, the expanded microspheres of the present application remain integral, and part of the blowing agent remains encapsulated inside the microsphere shell in a liquid state with the air filling the rest of its expanded volume in order to remain expanded. Therefore, the present invention generates a cotton-wool like residue at the interface, thus enabling the chemical bonding to reduce to zero. The composition as claimed in claim 1 of the present application thus has no compression and no change in the consistency of the structure of the adhesive matrix. Furthermore, Hartman et al. fails to teach thermoexpandable microspheres present in a range from 1 to 30% by volume.

Applicants further submit that there is no teaching nor suggestion to one of skill in the art in Hartman et al. to provide a composition with thermoexpandable microspheres that can release only part of their contents at an interface to deactivate an adhesive without forming voids in the matrix as taught by claim 1 of the present application. Accordingly, Applicants submit that the present invention is not obvious in view of Hartman et al. and that the rejection be withdrawn.

Applicants submit that Everaerts et al. similarly fails to teach or suggest the present invention either alone or in combination with the other references. Everaerts et al. teaches a clear and essentially colorless adhesive containing an abundance of polymerizing materials that, by heating or by subjecting the material to UV radiation, realizes a tackified pressure sensitive tape for use with material substrates such as metal and plastic panels. Everaerts et al. disclose a foam-like pressure sensitive adhesive tape/sheet. The contribution of the

thermally expanded plastic microspheres is to create a pressure sensitive tape by foaming in order to make a tape with suitable pressure tackiness on the substrate which, due to the expanded higher thickness, gives more rigidity (column 10 lines 29-44 and 54-62). Thus, Everaerts et al.'s microspheres are used for creating pressure from foaming voids. As previously noted above, there are no voids produced in the composition as claimed in claim 1 of the present application.

Applicants further note that there is no teaching in Everaerts et al. towards thermally expandable microspheres that are used for de-bonding or adhesion deactivating at an interface where the composition is applied as with the present invention as recited in Claim 1 of the present invention. **Everaerts et al. is directed to an adhesive, not a deadhesive.** Thus, Everaerts et al. contains no motivation to teach or suggest all of the elements of the present invention either alone or in combination as it teaches away from the present invention. Accordingly, Everaerts et al. does not teach the presently claimed invention of a composition comprising an adhesive agent and dispersed therein thermoexpandable microcapsules as recited in claim 1. Therefore, Applicants respectfully request withdrawal of this 35 U.S.C. § 103(a) rejection.

Applicants submit that the Makhlof et al. reference also fails to teach or suggest the presented invention either alone or in combination with the other cited references. Makhlof et al. teaches a method of reinforcing thin rigid plates by spraying a curable composition onto one side of the rigid plate and curing the polymer composition while only in contact with the rigid plate. Makhlof et al. further teaches thermosetting compositions containing thermosetting epoxy resins, expandable microspheres, particulate reinforcing materials such as milled glass and carbon fibers. The microspheres of Makhlof et al. are used to avoid shrinkage of the composite thermosetting materials (column 3 lines 46-47), by using microspheres to increase the volume of the plastic or reduce its density. Makhlof et al. fails to teach or suggest expansion causing adhesion deactivation of bonded surfaces as recited in Claim 1 of the present invention. Furthermore, the expandable microspheres of Makhlof et al. are noted to be in the 1 to 7 percent range and preferably in the 3 to 5 percent range. Accordingly, Applicants submit that independent claim 1 is not obvious in view of Makhlof et al.

Gehlsen et al. also fail to teach or suggest the present invention either alone or in combination with the other references. Gehlsen et al. teach the production of foam articles with substantially smooth surfaces (column 2 line 57 –60), “foam-in-place” articles (column 5 line 16-18), pressure sensitive adhesives and adhesive foams (column 5 lines 6-9). Gehlsen et al. disclose the production of foam articles formed by melt mixing a polymer composition and microspheres. The expandable and unexpandable microspheres are used for producing a foam, *i.e.*, a matrix with voids. As noted *supra* in the discussion under Hartman et al., the present invention is not a matrix with voids. Thus, there is no suggestion nor any teaching of the microspheres causing adhesion deactivation of bonded surfaces by partial leakage of their contents as recited in claim 1 of the present application. Applicants' compositions comprise thermoexpandable microspheres that are **adhesion de-activating, not activating as taught by Gehlsen et al.** (See, column 5, lines 8-9) and thus substantially differ from this reference. Additionally, Applicants note that Gehlsen et al. fails to teach or disclose the volume of the thermoexpandable microcapsules as claimed in claims 1 and 24 of the present application. Therefore, the presently claimed application is not obvious in view of Gehlsen et al. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections based on Gehlsen et al.

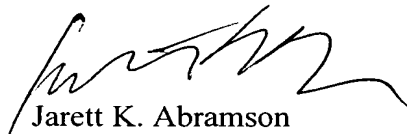
Additionally, Applicants submit that EP 0717091 (hereinafter "the '091 application") fails to teach or suggest the present invention. The '091 application teaches a pressure sensitive foam comprising a complexity of polymer materials and temperature activated expandable particulate materials. The expandable particulate materials comprise a polymeric shell and a volatilizable liquid core to provide volume change. The '091 application fails to teach or suggest that microspheres cause adhesion deactivation of bonded surfaces by partial leakage of their contents as recited in Claim 1 of the present invention. Furthermore, the '091 application fails to teach or suggest heat triggered thermoexpandable microcapsules. Therefore, Applicants respectfully request reconsideration of the claims in view of these arguments.

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CONCLUSION

In view of the remarks and exhibits presented herein, Applicants respectfully submit that the claims in the instant application define patentable subject matter. If questions should remain after consideration of the foregoing, the Examiner is kindly requested to contact Applicants' attorney at the address or telephone number given herein.

Respectfully submitted,

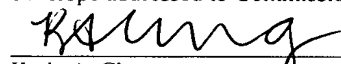


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